DRAFT

REPORT ON FISHERY ISSUES REGARDING CENTRAL DELTA INTAKES

A group of biologists and engineers met March 9, 2000 to identify how two proposed new diversion locations in the cental delta might be expected to affect fish resources. This report summarizes the results of that meeting.

PARTICIPANTS

Many members of this group were members of the Diversion Effects of Fish Team that has earlier presented two reports on issues relating to other Calfed proposals. Participants included: Pete Chadwick (CALFED), Dave Forkel (Delta Wetlands), Paul Forsberg (DFG) Robert Gonzales (EBMUD), Darryl Hayes (CALFED), Bruce Herbold (EPA), William R Johnston (MID, SJRG), Tina Swanson (The Bay Institute), Mike Thabault (FWS), Matt Vandenberg (FWS), Frank Wernette (DFG), Jim White (DFG).

PROPOSALS

Three possible configurations of diversion intakes in the central delta were described.

Option A: several intakes of 1333 cfs (total capacity 4000 cfs) around the periphery of MacDonald Island could be used to deliver water to south and central delta agriculture, as well as to the State/Federal export facilities. Maximum delta agricultural deliveries are approximately 1500 cfs at the height of the growing season, leaving 2500 cfs available at that time to replace Federal south delta exports. Such a diversion might reduce the impact of federal exports on stage in south delta channels by approximately .1 ft for each 1000 cfs of reduction in federal diversions from the south delta. Water could be conveyed south from MacDonald Island either via existing channels (Trapper and Whiskey sloughs) or by an overland conveyance. Delivery to delta agriculture would require some sort of overland distribution network. The present South Delta work plan includes consideration of a consolidated point of diversion that would deliver water to delta agriculture from Clifton Court Forebay.

Option B: Several intakes (total capacity 4000 cfs) around the periphery of Bacon Island could be used either to fill storage space on the island (120 TAF) or as a site of direct diversion for the State and Federal export facilities. This option includes a direct overland connection to Clifton Court Forebay. Diversion and storage of water on this island have been simulated in the development of the Environmental Water Account and found to add considerable flexibility in reducing entrainment impacts of the projects.

Option AB: Since the structure and function of options A and B are not mutually exclusive, the third option simply consists of a combination.

These options were presented as possible tools CalFed might more fully evaluate in Stage I. These options would need to be integrated with the South Delta Program, the Integrated Storage Investigations, the proposed Hood Diversion, several components of the Ecosystem Restoration Plan, and other parts of the CalFed program. None of these options were presented as final designs or as exclusive alternatives to other elements of the CalFed program.

ASSUMPTIONS

In all cases, diversions were assumed to be possible through screens that did not require associated salvage operations. The Fish Facilities Team has been asked to review the feasibility of such an operation. Information was presented by Contra Costa Water District on the effectiveness of their new on-river diversion on Old River. Intensive sampling by DFG has failed to find any appreciable densities of delta smelt in front of their screens, even at times when densities in the state and federal salvage facilities nearby were resulting in substantial restrictions on export operations.

For comparison, the group assumed that the screening of delta agricultural diversions called for in the Ecosystem Restoration Plan would be in place. Therefore, the evaluation of this proposal focused not on the benefits of screens but on the effects of a consolidated diversion point for delta agriculture.

It was assumed that operations of these facilities would be done in a manner to reduce overall export impacts. In fact, such operations might require considerable more knowledge than is currently available.

POTENTIAL EFFECTS

Effects of cental delta diversions were identified as being both potentially beneficial and detrimental. Many of the proposed beneficial effects would be very sensitive to the size of the diversion. Most of the hypothesized impacts, both positive and negative, would be actually be determined by operational constraints on the diversions.

Hypotheses of Benefit:

1. Effective screening without the need for salvage and handling would eliminate post-screening mortality rates that have been identified at the existing facilities.
2. Greater tidal action in the central delta would disperse fish away from the screens more effectively than from the south delta. At larger diversion sizes this effect would be reduced.
3. Diversions from a larger channel have proportionately smaller impacts on the fish in the channel. At larger diversion sizes this effect would be reduced.
4. Spatial flexibility could reduce export impacts by diverting water from site where fish density is lower. At larger diversion sizes this effect would be reduced.
5. Storage, as included in options B and AB, would permit diversions to be taken from stored water at times when fish densities are high in the delta. At smaller storage sizes this effect would be reduced.
6. Alternative supplies to delta agriculture would reduce barrier impacts.
7. A consolidated screened diversion for delta agricultural supplies could reduce impacts of agricultural diversions.

Hypotheses of Detriment:

1. Greater proximity of a diversion point to spawning grounds, migrations corridors or principal habitats of species of concern would expose more of the population to screening stress.
2. A central delta diversion point does not address hydrodynamic impacts and associated indirect mortality concerns.

3. Lack of information from salvage operations could increase difficulty of managing projects in real-time to reduce impacts.

SPECIES-SPECIFIC CONCERNS

The applicability of each hypothesis was evaluated for each of the species of concern identified in the earlier DEFT reports. These species and life-stages were identified as potential gaps in the protection from entrainment afforded by the 1995 Water Quality Control Plan. They are:

Delta smelt adults – Jan through March
Delta smelt young – March through June
chinook salmon fry – December through February of wet years
Fall-run smolts from the San Joaquin – March through June
Spring-run Yearlings – November through January
Striped bass – May through July of wet years when striped bass spawn in the lower San Joaquin
June through August of dry years when spawning is restricted to the Sacramento
Steelhead – February through May
Splittail – May through July of wet years following dry years.

The results of a preliminary assessment of the degree to which each hypothesis is applicable to each species of concern is presented in table I. Overall, species for which many beneficial hypotheses may apply are also species for which many of the detrimental hypotheses are likely to apply. The net effect of these competing effects on each species would need to be addressed by detailed analyses, research and monitoring.

GENERAL CONCERNS

Additional issues that were raised but not evaluated included:

1. The value of aquatic habitats in Trapper and Whiskey sloughs that are proposed to be isolated and used for conveyance in option A.
2. The effects of isolating Trapper and Whiskey slough on hydrodynamics of the south delta.
3. The interaction of Option A with habitat restoration efforts in the south delta.
4. The relationship of these options with the use of an Environmental Water Account.
5. The relationship of Option A with barrier and dredging operations in the south delta

Species	Delta smelt		Salmonids				Striped bass		Splittail
life stage	adults	young	fry	SJ	Spring	steel-head	wet	dry	young
Beneficial Hypotheses									
1	++	++	+	+	+	+	0	+	+
2	+	+	+	+	0	+	0	+	+
3	+	+	0	+	+	+	+	+	++
4	++	++	0	0	0	0	0	+	+
5	++	++	0	++	+	+	++	++	+
6	0	+-++	0	0-+	0	0	+	0	+
7	0-+	0-+	0	0	0	0	0-+	0	+
Detrimental Hypotheses									
1	++	++	+	++	++	++	++	+	+
2	+	++	0-+	+	+	+	++	++	0-+
3	++	+	0	+	0	0	0	0	+

Table 1. Summary of applicability of each hypothesis to life stage of concern. 0 indicates that hypothesis does not relate to life stage. + indicates that hypothetical effect may be relevant to indicated life stage. ++ indicates that hypothetical effect could be very relevant to indicated life stage.

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